Models of Head Scattered Acoustic Fields for Virtual Acoustic Reality

A simplification of a dummy-head model in the form of a sphere is used to simulate in the time domain the scattered sound field around the sphere due to a plane wave.

The cross-talk cancellation network is simulated by reconciliation of the sphere model and the signal processing theory. In the following example the input signals to the loudspeakers are digitally filtered to produce "1" at the left ear, and "0" at the right ear. When the loudspeakers are placed close together, the production of virtual images is superior to that produced by a conventional loudspeaker arrangement.

A more difficult task is to reproduce these desired signals for multiple listeners simultaneously. Consequently, the complexity of numerical calculations demands a high computational cost.